

Review of biodegradable bags shows not enough is known to judge if they are safe for environment

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A team of researchers from the U.K. Austria and France has found that not enough work has been done to determine if biodegradable shopping

bags are actually environmentally friendly. In their paper published in the journal *Royal Society Open Science*, the group describes their survey regarding biodegradable bag research efforts and what they found.

As the public has become aware of the ecological harm of plastic shopping bags, scientists have begun looking for suitable replacements. The result, in many instances, has been biodegradable bags. These bags, it is assumed, break down in landfills or in the open environment, and thus cause no harm. But the team wondered if this was really the case. To find out, they conducted a survey and review of work done by researchers to test such bags. They [report](#) that not nearly enough research has been done to demonstrate whether the bags are harmless or not.

Work done to find out if biodegradable bags hold up to claims, the researchers suggest, was not only inconsistent, but was often poorly defined. For their study, they looked only at [work](#) done to find out if and how biodegradable bags actually degrade among bags that make it to the ocean. They report that many such studies were conducted only in labs, not ocean settings, which offered limited results. They also found that there were no real rules that defined what biodegradable really means. Does a bag have to degrade in a few weeks or months to qualify, or can it take a few years? The researchers found there was no consensus. They report also that there were no standards in place regarding the chemicals left behind when a bag degrades—in most such cases, testing was only done to see if the bag broke down or not.

The researchers suggest that not only is more testing required, but it needs to be done under real-world conditions. And standards need to be created that define biodegradability and whether the broken-down chemicals are causing harm to the environment.

More information: Jesse P. Harrison et al. Biodegradability standards for carrier bags and plastic films in aquatic environments: a critical

review, *Royal Society Open Science* (2018). [DOI: 10.1098/rsos.171792](https://doi.org/10.1098/rsos.171792)

Abstract

Plastic litter is encountered in aquatic ecosystems across the globe, including polar environments and the deep sea. To mitigate the adverse societal and ecological impacts of this waste, there has been debate on whether 'biodegradable' materials should be granted exemptions from plastic bag bans and levies. However, great care must be exercised when attempting to define this term, due to the broad and complex range of physical and chemical conditions encountered within natural ecosystems. Here, we review existing international industry standards and regional test methods for evaluating the biodegradability of plastics within aquatic environments (wastewater, unmanaged freshwater and marine habitats). We argue that current standards and test methods are insufficient in their ability to realistically predict the biodegradability of carrier bags in these environments, due to several shortcomings in experimental procedures and a paucity of information in the scientific literature. Moreover, existing biodegradability standards and test methods for aquatic environments do not involve toxicity testing or account for the potentially adverse ecological impacts of carrier bags, plastic additives, polymer degradation products or small (microscopic) plastic particles that can arise via fragmentation. Successfully addressing these knowledge gaps is a key requirement for developing new biodegradability standard(s) for lightweight carrier bags.

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